

AMENDMENTS TO THE CLAIMS

- 1) (Currently amended) A ~~sputtered silicon~~ micro-machined structure ~~being positioned on a work piece together with comprising:~~
- a structural layer consisting essentially of sputtered silicon, said structural layer comprising a core silicon layer; and
- a pre-fabricated integrated electronic circuitry electrically coupled to said structural layer, said pre-fabricated integrated electronic circuitry is characterized as an operational semiconductor circuitry and being formed on top of a sacrificial layer, said sputtered silicon structure having a thermal fabrication budget, said operational circuitry having a first critical thermal budget, wherein said thermal fabrication budget is smaller than said first critical thermal budget.
- 2) (Currently amended) A ~~sputtered silicon~~ The micro-machined structure ~~being formed on top of a sacrificial layer claim 1, wherein said sputtered silicon structure having a thermal fabrication budget, said sacrificial structural layer having a second critical thermal budget, wherein said thermal fabrication budget is smaller than said second critical thermal budget further comprises:~~
- at least one conductive layer in contact with said core silicon layer.
- 3) (Currently amended) The ~~sputtered silicon~~ micro-machined structure of claim 12, wherein said ~~sacrificial~~ at least one conductive layer is made from a Titanium based material ~~dissolvable by a wet etchant.~~
- 4) (Currently amended) The ~~sputtered silicon~~ micro-machined structure of claim 32, wherein said ~~wet etchant~~ at least one conductive layer is made from a material selected from a group consisting of ~~6:1-20:1 buffered HF and NH₄HF+HC₂H₃O₂+H₂O~~ TiW and TiN.
- 5) (Currently amended) The ~~sputtered silicon~~ micro-machined structure of claim 4 ~~having a first permeability rate that is up to ten times higher than a second wet etchant permeability rate of a comparable polysilicon structure 2, in which said core silicon layer and said at least one conductive layer have essentially the same shape.~~

1 6) (Currently amended) The ~~sputtered silicon~~ micro-machined structure of claim ~~1-2~~,
2 wherein
3 said ~~sacrificial~~ core silicon layer is ~~made from a material dissolvable by a dry etchant~~ has a
4 first dissolving characteristic and said at least one conductive layer has a second dissolving
5 characteristic and wherein said second dissolving characteristic is compatible with said first
6 dissolving characteristic.

1 7) (Currently amended) The ~~sputtered silicon~~ micro-machined structure of claim ~~6~~1, wherein
2 said ~~material is an organic material~~ operational semiconductor circuitry includes an
3 aluminum-based metalization.

1 8) (Currently amended) The ~~sputtered silicon~~ micro-machined structure of claim ~~7~~1, wherein
2 said ~~organic material~~ operational semiconductor circuitry is polyimide a complimentary
3 metal oxide semiconductor (CMOS) circuitry.

1 9) (Currently amended) The ~~sputtered silicon~~ micro-machined structure of claim ~~1-2~~,
2 wherein ~~said sputtered silicon structure comprises a post-annealing configuration resulting from a~~
3 ~~pre-annealing configuration and a low temperature annealing transformation~~ further comprising:
4 at least one sealing layer.

1 10) (Currently amended) The ~~sputtered silicon~~ micro-machined structure of claim ~~4~~9, wherein
2 said ~~operational semiconductor circuitry includes an aluminum metalization~~ at least one
3 sealing layer consisting essentially of silicon nitride.

1 11) (Currently amended) The ~~sputtered silicon~~ micro-machined structure of claim ~~10~~1,
2 wherein
3 said ~~thermal fabrication budget~~ core silicon layer is ~~provided by a maximum annealing~~
4 ~~temperature of not more than 450° C~~ made from boron doped silicon.

1 12) (Currently amended) The ~~sputtered silicon~~ micro-machined structure of claim 1 ~~or 2 being~~
2 ~~a released structure, wherein~~

3 said core silicon layer is made from silicon doped with 40-80 ppm boron.

1 13) (Currently amended) The ~~sputtered silicon~~ micro-machined structure of claim ~~12~~1,
2 wherein

3 said released micro-machined structure has is characterized as having an essentially
4 buckling-free deformation configuration.

1 14) (Currently amended) The ~~sputtered silicon~~ micro-machined structure of claim ~~13~~ resulting
2 ~~from a sputtering with first sputtering criteria including:~~

3 A) an etchant selection; and

4 B) a sputtered structure thickness 1, wherein

5 said core silicon layer has a predetermined thickness which influences a strain gradient of
6 said micro-machined structure.

1 15) (Currently amended) The ~~sputtered silicon~~ micro-machined structure of claim ~~14~~1,
2 wherein said ~~etchant selection is made from a group consisting of 6-20:1 buffered HF and~~
3 NH₄HF+HC₂H₃O₂+H₂O structural layer further comprises:

4 a first conductive layer in contact with and on top of said core silicon layer; and

5 a second conductive layer in contact with and below said core silicon layer, wherein said
6 first and second conductive layers have essentially the same shape as said core silicon layer.

1 16) (Currently amended) The ~~sputtered silicon~~ micro-machined structure of claim ~~13~~1,
2 wherein

3 said micro-machined structure is characterized as having a variable sputtered layer thickness
4 and a correlated curvature, wherein said correlated curvature essentially decreases with an
5 increase of the variable sputtered layer thickness.

1 Claims 17-41 (Cancelled).